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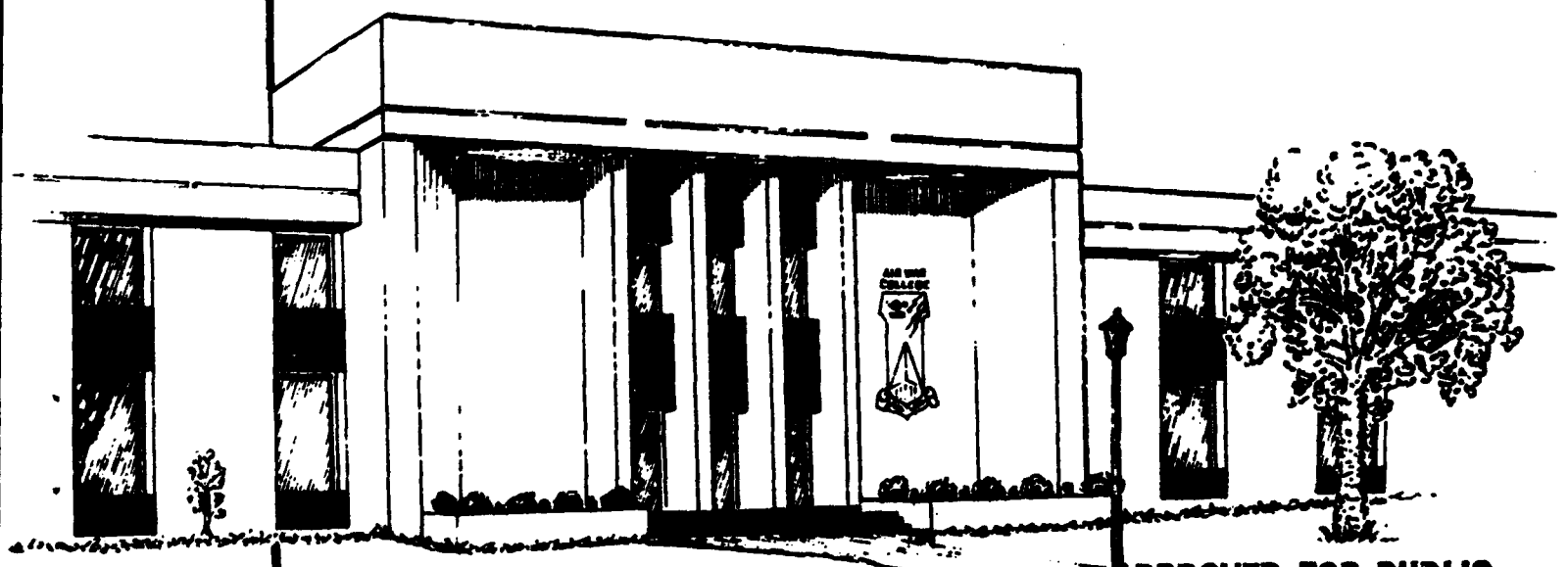
AIR WAR COLLEGE

RESEARCH REPORT

LOGISTICS IMPLICATIONS OF THE B-52G IN A CONVENTIONAL ROLE IN SUPPORT OF THE AIR LAND BATTLE AND BEYOND

COLONEL LARRY T. McDANIEL

1988



AIR UNIVERSITY
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LOGISTICS IMPLICATIONS OF THE B-52G IN A CONVENTIONAL ROLE IN SUPPORT OF THE AIR LAND BATTLE AND BEYOND

by

Larry T. McDaniel
Colonel, USAF

A RESEARCH REPORT SUBMITTED TO THE FACULTY

IN

FULFILLMENT OF THE RESEARCH

REQUIREMENT

Research Advisor: Mr. Ted Kluz

MAXWELL AIR FORCE BASE, ALABAMA

MAY 1988

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AIR WAR COLLEGE RESEARCH REPORT ABSTRACT

TITLE: Logistics Implications of the B-52G in a Conventional Role in Support of the Air Land Battle and Beyond

AUTHOR: Larry T. McDaniel, Colonel, USAF

As the leaders of the U.S. and U.S.S.R. continue efforts to reduce nuclear forces, it becomes more important that the U.S. reassess its conventional weapons capability to insure that such a force is sufficient to deter soviet aggression, and if such deterrence fails, that conventional forces available are capable of fighting and winning any conflict. It is generally believed by U.S. military experts that conventional forces of the Warsaw Pact are superior, at least in numbers, to those of the North Atlantic Treaty Alliance. What then can and should be done to fill this gap? One answer is to maintain in service, as opposed to retiring, the Strategic Air Command possessed B-52G model fleet as a conventional weapons carrier. This would create many logistical problems requiring solutions. The greatest of these will likely be the funding required to modify and maintain these aircraft as well as to deploy new stand-off conventional weapons which would give the aircraft and crew a chance of surviving the hostile air environment. Some of the more complex logistical problems will be reviewed in this paper with some suggestions and recommendations.

BIOGRAPHICAL SKETCH

Colonel Larry T. McDaniel (M.S., Air Force Institute of Technology, School of Systems and Logistics) started his Air Force career as a aircraft maintenance officer in a B-52D Organizational Maintenance Squadron, 11th Bombardment Wing, Altus AFB, Oklahoma in 1967. Today, he is still working B-52 aircraft and issues. Over his career, Col McDaniel has served in five foreign countries and in an equal number of Major Air Commands. He has served an exchange tour at the Royal Australian Air Force Support Command Headquarters in Melbourne in 1980/82 and returned to SAC where he has served two tours working on B-52Gs while holding positions as OMS Commander and Assistant Deputy Commander for Maintenance at each location. Col McDaniel graduated from the Armed Forces Staff College in Norfolk, Virginia in 1980. He is a graduate of the Air War College, class of 1988.

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"The Greatest and most decisive act of judgement which a statesman and commander performs is that of correctly recognizing...the kind of war he is undertaking, of not taking it for, or wishing to make it, something which by the nature of the circumstances it cannot be. This is, therefore, the first and most comprehensive of all strategic questions."

Carl Von Clausewitz

CHAPTER I

INTRODUCTION

As political and military leaders of the U.S. and the U.S.S.R. work toward reductions in the nuclear forces which have, heretofore, been considered the free world's "nuclear umbrella of safety," it becomes more important than at any other time since the invention of nuclear weaponry that the U.S. maintain a strong deterrent force across the entire spectrum of potential combat confrontations ranging from insurgencies to general nuclear war. General Curtis Lemay perhaps made this point best when he stated,

> "By maintaining superior forces to implement our deterrent strategy across the full spectrum of conflict, we can foreclose the enemy's initiative by putting him in a position where he has no profitable options for aggressive action. I believe that state of affairs should be achieved and preserved as the present day method of maintaining the peace we all desire. (3:2)

In light of the potential reduction in nuclear capabilities, and the subsequent importance of conventional forces, the question then becomes whether or not available conventional forces are adequate to deter aggression at the

lower end of the conflict spectrum and if not, what is the most effective option(s) available and what are the associated costs. The answer to this question, at least in part, has been answered by Air Force General John Chain, the Commander in Chief Strategic Air Command (CINCSAC). In a New York Times article, 18 September, 1987, General Chain stated that he had proposed a 3 billion dollar plan to modify 150 B-52s to defend Western Europe in the event that nuclear weapons capable of defending the North Atlantic Treaty Organization (NATO) forces are banned. (11:7) The basis of this research paper is built upon General Chain's plan.

This paper will explore the costs and other logistical implications of extending the active life of the B-52G and the problems which will be encountered in fielding this fleet as a welcome addition to conventional airpower. Areas which will be covered are the requirements of aircraft basing options and those implications, B-52G structural airframe life remaining, conventional weapons availability, future supply support considerations, aircraft modifications which would be required to enhance present conventional capabilities, personnel and manning requirements, and finally a cost analysis of the entire retention effort will be made.

To provide a background for this SAC proposal and to aid in the development of a proper perspective for this initiative, a review is necessary of the history of the B-52

in the conventional role. This will include an in-depth look at the B-52's experience in the Vietnam, its maritime roles, past and present and its present iron bomb capabilities and unclassified missions.

Finally, conclusions will be drawn as to the feasibility of the plan as seen by the author, and also some possible alternatives that exist to the logistical dilemmas which are considered to be the key factors which could negate General Chain's plan.

Chapter II

A CONVENTIONAL BOMBER - A BOLD NEW PLAN

Although the B-52 has not seen action in a conventional role since the end of the Vietnam War, SAC has continued to maintain the conventional capability of the G model fleet, albeit degraded. Along with the current hardware capabilities, some conventional operational training has also been accomplished to meet alternate mission requirements. However, until General Chain's assumption of command of SAC, the convention role of the B-52 fleet was very much a "back burner" concept. Now, his bold new ideas for the bomber fleet have significantly shifted the emphasis on current conventional capabilities and portend even greater changes in the future. A detailed review of General Chain's plan and the rationale on which it is based is necessary to fully comprehend the magnitude of the proposal and the potential of the logistical considerations which it will generate.

General Chain stated in the September, 1987, New York Times article that an agreement on intermediate range nuclear missiles would leave NATO in an inferior position with respect to conventional capabilities of the Warsaw Pact. He continued by stating that his seven year plan has the approval of the commanders in the field, but would require the approval of the Secretary of Defense and

Congress. Under General Chain's plan, the remaining B-52Gs, which are scheduled for retirement in the 1990s would be refurbished and new stockpiles of parts procured. (11:7)

The plan calls for all 90 B-52Hs, as well as the 100 B-1s now becoming operational, and the 132 new Stealth bombers scheduled for the field in the mid 1990s, to carry the responsibilities as the manned bomber leg of the strategic nuclear triad. (11:7)

General Chain stated that if nuclear missiles are removed from Western Europe, NATO forces could survive only for approximately seven to ten days before being overrun by Warsaw Pact forces. This scenario leaves Western leaders with only two options - surrender or escalate the conflict to strategic nuclear weapons. The B-52G in a conventional role could aid NATO in holding out longer and in turn provide breathing time which may be imperative. (11:7)

As portrayed in the New York Times article, General Chain's plan would not have the B-52s carry hard bombs as they did in Vietnam, but instead, they would be configured for standoff weapons which could be fired from a range 25-200 miles and, therefore, would provide maximum safety for the aircraft and crew. To insure survivability, the Air Force has been developing guidance systems which would allow a missile to hit distant targets with pinpoint accuracy. (11:7)

General Chain further stated that the B-52G could be

expected to penetrate moderately defended areas by flying 200 feet above the ground and by hiding behind mountains and following the valley floors. He added that SAC presently has pilots training in the B-52 for just such missions. Targets selected for these missions are largely behind enemy lines and would be such things as railheads, supply depots, and airfields. (11:7)

The B-52G, which can fly 7,300 miles at high altitudes without refueling, could fly low level, to the target and return, from bases within Great Britain and/or other bases throughout Europe, or with the aid of air refueling, such missions could be flown, if necessary, from the United States. (11:7)

Included in the three billion dollar price tag would be funds necessary to recruit, train and sustain additional people to maintain and fly the G's. Some of these forces would come from present ranks, but this new mission would require at least 2,000 additional personnel to complete implementation. (11:7)

General Chain's assessment of the East-West conventional military balance and the dynamic strategic nuclear arena is supported, for the most part, in a report completed in August, 1987, by the RAND Corporation. This report concluded that if one assumes a two war scenario, the U.S. should have the capability to "dedicate a force of approximately 75 to 100 heavy bombers to conventional missions." RAND also contends that this force should not be

constrained by the dual commitment of the Single Integrated Operations Plan (SIOP). This would insure that the bombers are always available for conventional missions at all times, without degrading the SIOP commitment. In addition, this would provide for the adequate training, planning and equipping of conventional forces. (13:vii)

The past emphasis on meeting the SIOP commitment has created a situation leading to a lack of attention and scarcity of resources allocated to developing the potential of the heavy bomber in the conventional role. (13:3)

The RAND report further concluded that, because of the possible availability of the B-52Gs which are scheduled for retirement in the near future, "the United States has the unique opportunity to acquire a significant new military capability at an affordable cost." (13:3)

CHAPTER III

THE B-52 PAST AND PRESENT

History of the B-52 in Vietnam

In any encounter of conventional forces in Central Europe, it is quite reasonable to assume that the air environment will be hostile indeed and that, at least, during the early stages of any such confrontation, the NATO forces will most likely be required to fight under a decided lack of air superiority. Such an air environment would be difficult, at best, for B-52G operations. For that reason, current plans call for the use of the G models as platforms from which to launch one or more types of stand off missiles (SOM). This employment concept is certainly logical and feasible, and if this were the only plan for employment in a European scenario, then the history of the B-52 in Vietnam would be of little relevance or value. It is this authors contention, however, that the B-52 could and should be used as a hard bomb carrier during the later parts of just such a conflict when the air environment is more favorable. Since that hypothesis rests on proofs offered by the Vietnamese experience, the following narrative is necessary.

From the time in 1951 that the first B-52 rolled off the production line at the Boeing Aircraft Company in Seattle, Washington until 1965, the B-52 had been used almost exclusively as a delivery platform for nuclear

weapons. With the exception of Vietnam, the planning and programming activities for determining strategic weapons requirements have focused almost totally on nuclear forces. The emphasis placed on this vitally important area has obscured the conventional capabilities of the B-52 and its inherent potential for deterring conflicts, and if required, providing the backbone for a conventional bombing campaign. (17:32) General David C. Jones, Chairman of the Joint Chiefs of Staff, in an appearance before the Senate Armed Services committee in 1977 stated,

> "Common usage in the U.S. has tended to make strategic forces almost synonymous with intercontinental nuclear forces in the minds of many. ...when judging the total contribution of our strategic nuclear forces, due consideration should be given both to their synergistic relationship with non-nuclear forces and to the conventional capability of such strategic systems as the B-52...(17:33)

It was this conventional force which carried the war to the enemy during the bombing effort of the Vietnam War.

The first B-52 strike of the Vietnam war came on 18 June 1965 against a typical Viet Cong jungle sanctuary, measuring two by four Kilometers, in the Binh Duong Province, northwest of Saigon. This first effort received entensive post attack study. The ultimate finding was that the target was hit as planned allowing ground troops access to an area that had previously been inaccessible, and finally, that the coordination of the mission had been a success. Following this mission and through the remainder of 1965, the B-52 mission continued to increase. Early in

1966, the B-52F was replaced with the B-52D. Along with this change of model, came an increase in aircraft capability and an increase in workload. Twice as many sorties were flown in the first half of 1966 as were flown in the last six months of 1965. (18:48) Because of the new conventional high density bombing system installed, each bombing mission of the D model carried 57 more bombs than its predecessor, the F model.

Although use of the B-52 in Vietnam was not without criticism, overall grades were very high indeed. General Westmoreland remarked, "Enemy troops fear B-52s, tactical air, artillery, and armour, in that order. (18:49) General Lucius D. Clay, Jr., Commander in Chief, Pacific Air Forces, stated that the B-52 was one of the special "tools" that made interdiction effective in Southeast Asia. (18:49)

By late 1965, B-52s were not only providing strategic bombing of North Vietnam, but also were engaged in close air support of both Army and Marine ground troops. Lieutenant General Lewis W. Walt, Commander of the III Marine Amphibious Force (MAF), commented following one such B-52 close air support mission, "we are more than impressed with the results; we are delighted. The timing was precise, the bombing was accurate, and the overall effort awesome to behold." (17:35)

During the early days of the campaign, close air support bombing was done no closer than 3,300 yards to friendly position. However, as techniques evolved and

situations changed, bombing within 1000 meters of U.S. personnel became the norm. General Westmoreland, in reflecting on the B-52's role in the Khe Sanh victory stated that,

> "The thing that broke their back basically was the fire of the B-52s. Now yes, we did have additional fire power. We were putting in around 100 TAC air sorties a day. We had sixteen 175 mm guns of the U.S. Army... but the big gun, the heavy weight of fire power was the tremendous tonnage of bombs dropped by our B-52s..." (17:36)

Further testimony to the B-52 effectiveness in the conventional role came from Major General F.C. Weyand, Commander of the First Field Force during Operation Attleboro. He offered what was a fitting tribute to the B-52 and what it meant to the infantry,

> "These B-52 strikes are of incalculable value. ...They do tremendous damage to enemy installations and base facilities: they destroy enemy fortifications; and most of all, they constitute a Sword of Damocles over the heads of VC (Viet Cong) field commanders that must enter into any of their plans that would call for massing units preparatory to a large scale attack." (18:50)

During the 1965 to 1968 ROLLING THUNDER bombing campaign, the B-52 made some runs into North Vietnam, however, many of the targets were minor and far short of the 94 "high value" targets originally designated in the early days of the conflict. Instead, targets were more generally found in South Vietnam, Laos, Cambodia, and the Southern Parts of North Vietnam. (17:36) (20:319) These targets were more commonly tactical as opposed to strategic and as such normally supported U.S. ground forces operations or

interdiction of supply routes. (17:36)

After the cessation of strategic bombing of North Vietnam in the 1968 ROLLING THUNDER campaign, it was expected that North Vietnam would negotiate seriously an end to hostilities throughout the country. After it became clear that this would not happen, one last effort was made to end the war on more favorable terms. Bombing of the North was again started in May of 1972. (20:326-329)

LINEBACKER I, May-September 1972 and LINEBACKER II, an eleven day bombing campaign in late December 1972, were much the same as the 1965-68 ROLLING THUNDER campaigns with two exceptions. The first was that during both LINEBACKER operations, U.S. forces were cleared to choose from 94 of the North's richest targets. The second exception lay in the intensity of these efforts.

During the first raid of LINEBACKER II, over one third of all available SAC B-52s participated. (17:1) This operation was started on 18 December, 1972 and continued through 26 December with only a 36 hour respite for the Christmas holiday. During this period, bombing was conducted around the clock with the B-52 attacking only at night. (8:153)

Although the target list for the B-52 was significantly expanded for the LINEBACKER II operation, it still did not include such targets as industrial plants, manufacturing centers, and war production facilities. Most targets identified for the B-52 were what was considered

area targets such as railroad marshalling yards and military storage areas, mainly in the Hanoi-Haiphong area. (8:154)

The B-52s were required to penetrate extremely sophisticated air defense systems made up of SAMs and AAA, all supported by an overlapping series of radar nets. Hanoi was protected by an estimated eleven or twelve SAM sites, while nine or ten more sites surrounded Haiphong. Supported by stand-off jamming from supporting aircraft, the B-52 used organic electronic jamming and radar "chaff" screens. On some missions, the chaff screens were rendered less than effective by 100 knot winds which blew the chaff from target approaches and directly resulted in some of the major B-52 losses. (8:159) (23:2)

An estimated 1,000 SAMS were launched in defense, but of the 729 sorties flown, only 15 aircraft were destroyed, nine B-52Ds and six B-52Gs. There were also 30 enemy fighter attacks launched without loss of aircraft. (8:155) The overall loss rate for this operation was approximately two percent, one percent lower than what was expected and about one percent higher than what some studies consider acceptable in future B-52 conventional scenarios. (8:155)

The B-52s use in the LINEBACKER II bombing operations was reported to have reduced North Vietnamese imports by approximately 80 percent, electrical power production by over 80 percent and POL supplies by 25 percent. By the end of the campaign, the bombing of

airfields and SAM sites had also virtually eliminated the North's war fighting capability. Air operations over North Vietnam during the final phase of LINEBACKER II were carried out with virtual impunity. (16:314) The most significant achievement, however, as well as the objective of the LINEBACKER II bombing, was bringing the North back to the negotiating table. In fact, within a month of the LINEBACKER II operation, the North had signed a peace agreement which provided for the end of the U.S. military effort in Vietnam and also set the agenda for the release of U.S. Prisoners of War. (17:40)

From the original Arc Light Mission flown in 1965 to the end of LINEBACKER II in December 1972, over 126,500 B-52 sorties were flown and 2,633,035 tons of bombs were dropped in direct support of the war in Indochina. (17:40) (23:1) By 18 August 1973, B-52 use in Southeast Asia was over. (17:22) Following the War in Vietnam, the B-52s were brought home to again assume their primary role in nuclear deterrence as defined in the Single Integrated Operational Plan (SIOP). (17:1)

Current Conventional Capabilities

The history of the B-52 in Vietnam provides a fair indication of the aircraft's delivery capabilities. However, the B-52G model was not used extensively in Vietnam nor were its present maritime capabilities employed during that conflict. With this in mind, it then seems logical to take a quick look at current conventional capabilities of

the G model. General James P. McCarthy, past SAC Eighth Air Force Commander had this to say of these capabilities.

> "From the historical perspective, strategic conventional air power has proved its efficiency in preventing war and waging it. Our current force of B-52 bombers provides theater commanders with highly responsive platforms able to rapidly deliver large, varied payloads in support of a broad range of missions on land or at sea. Its capabilities to project tremendous conventional power anywhere in the world is unrivaled by any other weapon system." (19:20)

The B-52G is the sixth operational model of seven B-52 models to be built. This eight engine strategic bomber can carry a total of 312,000 pounds of JP-4 fuel and has a range of 12,500 miles unrefueled. It cruises at altitudes in excess of 50,000 feet and can deliver its weapons from that altitude down to a few hundred feet. Of a total production of 193, only 167 remain. (18:14-15) Although General Chain refers to retaining, 150 G models, one must assume he is speaking in even numbers and that he is actually referring to the entire fleet. As a note of interest, the remainder of the B-52 fleet is comprised of 96 H models, two of which presently belong to Air Force System Command. The average age of the G model fleet is now 27 years. (26:9)

The B-52 is currently capable of delivering a wide range of gravity weapons and with very little modification effort could be made to effectively carry many others. Table I provides a quick review of the weapon categories with specific examples of those munitions which are <u>compatible</u> with B-52 operations.

TABLE I (17:48)

WEAPONS CATEGORIES COMPATIBLE WITH B-52G

TYPE	DESCRIPTION	EXAMPLES
High explosive bombs	Gravity bombs (demolition, general purpose, fragmentation and penetration weapons)	MK-82 Snake eye
Guided and Special purpose bombs	Electro optical and laser guided	GBU-15 MK-84
Dispenser and Cluster Weapon systems	Canister and bomb type dispensers	CBU-58 (bomb-let unit) SUU-30 (dis-penser)
Land and sea mines	Air dropped individual or cluster mines including underwater/ underground and sur-face weapons	MK-52 MK-56

Although the B-52G model has the potential for carrying guided or special purpose bombs, it is presently configured to carry only the unguided or dumb bombs. As related earlier, present conventional capabilities are based on gravity weapons only (with the exception of the Harpoon which will be discussed later) and all must be ejected from the bomb bay. (26:9) Table 2 presents maximum loads of gravity weapons which can be deployed in the present G model configuration.

TABLE 2 (22:60)

B-52G MAXIMUM CONVENTIONAL BOMB LOADS

Bomb	Number	Pounds
MK 82-500lb. (531lb. ea.)	27	14,300
MK 117-750lb. (823lb. ea.)	27	22,200
MK 84-2000lb. (1,970lb. ea.)	8	15,800

Work is presently underway to modify old hound dog missile pylons which will give the G model the same wing capability as the retired B-52D model. That is, it will be capable of carrying a total wing load of 24 each - 500 and 750 pound bombs. The total number of pylons presently funded for refurbishment is classified. A sufficient number of pylons to completely outfit the B-52 fleet would presumably be furnished during future conversion efforts. The addition of these pylons significantly increases the overall efficiency and effectiveness of the G model as a conventional platform. However, without the pylons, the B-52G's conventional load capability, as well as its range, is greater than any other U.S. supported aircraft. The feature which makes the B-52G stand out in the conventional role is its ability to saturate bomb a relatively inaccessible area with a small number of aircraft. Specifically, it has approximately three times the range and payload as its next closest rival, the fighter bomber. (18:40)

As relates to the types of gravity weapons which the

B-52G can physically carry, its non-nuclear capability has grown drastically since the pre-Vietnam era. The B-52G is capable of delivering over 20 different types of conventional munitions and at least six different types of sea mines. (15:7) Table 3 reflects the most common of these weapons and some of their characteristics. The four release systems listed at the top of the chart are briefly described on the following page.

TABLE 3 (15:59-62)

B-52G BOMBING SYSTEM CAPABILITIES

MUNITION	TYPE	CLUSTER SYSTEM	EXTERNAL MER	CLIP IN SYSTEM	SUU 24/A DISPENSER	LIVE WEIGHT
MK 81	GP	--	24	--	--	260
MK 82	GP	27	24	--	--	531
M 64A1	GP	27	--	--	--	561
M 117	DM	27	24	--	--	820
M 59A1	SAP	27	--	--	--	1039
M 124	PR	27	--	--	--	264
M 129E1	LF	27	--	--	--	200
M 65A1	GP	15	24	--	--	1104
M 35	IC	27	--	--	--	690
M 120A1	PH	6	--	--	--	168
MK 50	MINE	27	--	--	--	544
MK 53	MINE	27	--	--	--	378
MK 36	MINE	18	--	--	--	1110
MK 52	MINE	18	--	--	--	1190
MK 55	MINE	--	--	4	--	2120
MK 56	MINE	--	--	4	--	2055
MK 84	GP	--	--	8	--	1970
BLU-3/B	BLET	--	--	--	10656	1.74
BLU-26B	BLET	--	--	--	25488	.94
M 40	BLET	--	--	--	76320	.287
M 36	IC	27	--	--	--	900

GP = GENERAL PURPOSE
DM = DEMOLITION
PR = PRACTICE
LF = LEAFLET
IC = INCENDIARY
PH = PHOTOFLASH
MINE = SEA MINE
BLET = BOMBLET

Bomb Cluster Racks are used to carry the internal, bomb bay munitions load for the B-52G. Generally, this is a

three rack system capable of carrying 9 bombs per rack. This is sometimes modified when carrying odd shaped or sized bombs. (15:8)

The Douglas Multiple Ejector Racks (MER's) mounted in tandem on AGM-28 (hound dog air to ground missile) pylons can carry such loads as 12 Mk 82 500 pound bombs or an equal number of M 117 750 pound bombs. This increases the B-52 external load to as much as 9 tons (2 x 12 x 750). A single pylon is loaded under each wing of the B-52 between the inboard engine and the fuselage. (15:15)

The MHU-20/C Clip-in System is a rack assembly which can be mounted in either the forward, aft or both bomb bays of the B-52G. It was designed specifically to carry the 2000 pound class of bomb or sea mine. (15:43)

The SUU-24 Dispenser System is an aluminum box container loaded into the B-52 bomb bay which is electrically activated to sequentially release a large number of area coverage munitions. (15:23-24)

Presently the Strategic Air Command is tasked with supporting unified commanders in joint operations using Force Regulation 28-43, Mobility for Strategic Air Command Forces in Contingency Operation. This regulation details the concepts and capabilities for the mobility of SAC forces in support of contingency operations. Also, 28-43 defines the readiness standards required of SAC units when deployed and/or engaged in contingency operations. (17:52)

Maritime Roles, Past and Present

Even for the B-52G model, the conventional role is not a totally new ball game. In 1982, the Air Force Chief of Staff, General Charles A. Gabriel and the Chief of Naval Operations, Admiral James D. Watkins signed a memorandum of agreement for joint maritime operations. (5:45) General Gabriel shared his feelings on this effort by stating,

> "As the Falklands conflict demonstrated, air power is a critically important part of successful maritime operations. We will be putting more emphasis on such collateral roles as sea-lane protection, aerial minelaying and ship attack." (2:61)

In carrying out these new tasks, SAC has modified the B-52G to carry the air-to-surface, antiship Harpoon missile. SAC presently has two wings capable of supporting this AGM 84 weapon system, one at Anderson AFB, Guam and the other at Loring AFB, Maine.

The Harpoon missile is a thirteen foot radar guided missile weighing approximately 1200 pounds. (5:46) This 13 inch diameter missile carries a 500 pound hardened, steel warhead which contains a penetrating load of conventional high explosive. (9:9) The G model can carry twelve of these missiles and has a stand-off range of approximately fifty miles. Once launched, this weapon is built to fly at high speeds and low altitudes to complete its mission. A single G model, fully loaded with Harpoon missiles has been said to have roughly the same fire power as an Aegis class guided missile cruiser. (9:9) The outstanding capabilities of the harpoon missile plus the speed and range of the G model

makes it a superior platform for offensive fire power in the conventional maritime role. (5:46)

The B-52G also has a significant capability for carrying and deploying several types of aerial mines. (5:46) The types and some specifics of these mines can be found by referring to Table 3. The primary purpose of the B-52G as a minelayer, is to deliver naval mines into specified waters in order to destroy enemy shipping and/or disrupt maritime operations. (14:1)

In some sense, mines can be considered passive weapons. They generally do not cause damage or casualties unless the enemy elects to run the field or a field crossing is attempted before the field is announced. Because of this and past experiences, destroying the enemy's will by use of minefields has been considered to be less escalatory than say, a direct attack. These facts combined with the B-52G capability to lay large quantities of mines of most sizes, in a matter of hours, make this potential one which would be sorely missed in the event of the G model retirement. (7:v)

A collateral role to the anti-shipping role is another currently on-going effort of open sea reconnaissance. (5:49) SAC Regulation 3-1 states that the purpose of Sea Reconnaissance/Surveillance (SR/S) operations is to provide theater commanders with the ability to track potentially hostile naval forces. Searching for and reporting the location of enemy forces may be conducted

before and/or after the initiation of hostilities. There are four modes of B-52 SR/S operations listed in SAC 3-1:

1. Search
2. Shadow
3. Identify
4. Attack Support

The B-52 aircrew could be tasked with any one or all of the above listed operations on a single, given mission. (24:11-1) With equipment presently available, the B-52 can survey approximately 100,000 square miles of ocean area with only two to three hours over the targeted area. Present cameras and low level observation equipment are also available to aid in positive identification. (17:78) B-52 crews presently train in this role in a special series of missions called "Busy Observer." This on going effort could obviously provide significant support to any anti-shipping operation. (5:49)

CHAPTER IV

LOGISTICAL PROBLEMS OF THE CONVENTIONAL ROLE

Converting the B-52G to a conventional only platform and extending its structural life for use in the Air Land Battle and strategic, conventional interdiction has many logistical implications. The issues arising from these implications range from being logistically straightforward and simple to politically complex and difficult. The following discussion is only a broad brush over the individual issues and should be followed-up in depth to gain a full appreciation for the actions necessary to insure successful B-52G conversion and long term operation.

Aircraft Basing

The many years of B-52 forward basing in Guam, Thailand and Okinawa, especially during the Vietnam War, have provided SAC with a solid foundation for the planning of such force projections, either as a long term basing concept or as a shorter term contingency operation. Support for any such plan is awesome under any circumstance and requires in-depth plans covering all phases of the initial deployment, logistical support, equipage, beddown and employment of forces. Over the years, SAC has accumulated the necessary information and background to support any such forward basing efforts should they become necessary. Much of this information can be found in the 8000 series SAC

contingency plans which provide most of the requirements in detail. (17:53)

The basing of B-52s within the Continental United States (CONUS), however, is perhaps the quickest and easiest way to employ B-52s in a conventional role. Basing outside the CONUS poses many difficult problems. One such problem which significantly restricts basing options is the 10,000 foot plus runway required for this conventionally loaded aircraft. Also to be considered is the political considerations and impacts of this world known "nuclear" capable aircraft suddenly appearing on the soil of a country which is trying to make itself look as non-threating as possible. Perhaps worse is the impact of its arrival on the scene of a "previously conventional" conflict. (17:53)

On a closer look at these two basing modes, it becomes obvious that CONUS basing of a B-52 fleet assigned to air/land duties would certainly demand a significant amount of air refueling support. The General Research Corporation has used a bomber to tanker ratio of 1 to 2 in computing research and cost calculations. This ratio was based on the present force structure at Loring AFB, Maine. (4:199) Whether or not this ratio is the bottom line as a requirement for a single CONUS based conventional B-52G force is very questionable, however, the fact of the overall need for tanker support is not debatable.

Whether or not there presently exists bases within the CONUS with adequate support facilities is another matter

that is dependent on a host of variables, of which many of the details are classified. Some of those details remain under discussion and others have not even entered the discussion. Such variables include:

a. How many of the 167 B-52Gs will eventually be retained (as opposed to retired) as conventional bombers?
b. How many of the 132 proposed Advanced Technology Bombers will actually be procured and where will they be bedded down?
c. What are the implications of the Air National Guard and/or Air Force Reserves taking on ether part or all of the B-52G fleet? (This is a new idea which has not been previously introduced in this paper. It is an area of present discussion, one which this author feels would open up some interesting possibilities, as well as new bases and facilities. However, the scope of this paper does not lend itself to the Guard/Reserve discussion. Suffice to say, this certainly must be factored into any basing discussion.)
d. What other bases are presently available which could be used with only a minor investment? (Consider Whiteman, Kincheloe, Malmstrom, Robins, Clinton Sherman and Seymour Johnson)
e. How many bases would be required and could any conventional units be collocated?
f. How many installations would be freed up by the conversion of the G model to a conventional platform?

Basing B-52s outside the CONUS raises political questions as well as operational and logistical ones. Again, the political effects of having what is a well known nuclear carrier on foreign host country soil might prove to be totally unworkable and in any case, is a subject too broad and involved for this report. Likewise, the operational advantages and disadvantages of flying from a "forward" location, although interesting, are outside the focus of this paper. However, the logistical implications are equally interesting and present some hard decisions,

should this option avail itself.

The cost of operating B-52s overseas are not always as discernible as one might expect. Certainly, costs are generally greater when maintaining a force overseas due to several factors such as the extended logistical pipelines and the increased personnel cost-of-living allowance. The cost factors, however, are not all negative. As a matter of fact, the positive arguments for forward deployment of the B-52G make it somewhat appealing.

One of the largest and most obvious advantages of the forward located B-52 is the savings related to the unnecessary collocation of KC-135 units. Depending on the size of the unit, in terms of aircraft, crew and support requirements, plus the day to day training costs (parts, POL etc...), the cost of such a unit could be monumental. Also, one must consider the current Air Force shortage in air refueling resources to meet ever growing demands. In light of this, the release of even one previously collocated squadron of KC-135s to cover "other" requirements could mean tremendous savings in terms of the "added capability to meet air refueling requirements which have previously gone unfilled."

Supply support for a forward based B-52 unit(s) would not appear to be a problem, at least not one of distribution. In addition, B-52 parts availability will be covered in a later section. As relates to distribution, SAC, the Military Airlift Command, and Air Force Logistics

Command already have a distribution network which could easily adjust to any basing eventuality which might occur. That system has proven itself for the B-52 fleet in the Pacific over many years and would present only the smallest of start up problems anywhere the B-52s could conceivably be based.

B-52G Structural Life Remaining

In General Chain's New York Times article, he referred to the retirement of the B-52G in the mid 1990s (the specific scheduled retirement dates are classified). He also referred to the role change from nuclear to conventional for 150 B-52Gs. For the purpose of this paper, it is assumed that the G model drawdown will be an orderly process and that the aircraft will be either retired or converted to the conventional role over an extended period of time in the "mid 1990's." With this information in mind, what then are the implications for the structural life of the aircraft in an extended conventional role?

Research in this area has concluded that the B-52 structural life is good for approximately 35,000 flying hours with the mean airframe hours presently being about 15,000. (4:VI) The Air Force Logistics Command (AFLC) has certified that the B-52G, based on its present use rate, will be good until the year 2030. (4:179) The key words here are "based on its present use rate," referring to the G's primary role as a nuclear platform.

The figures used to determine the structural life of

the G model have been computed based on past data as has been collected through the on-going Aircraft Structural Integrity Program (ASIP). Since the ASIP data is based on stress loads over time, it obviously reflects stress placed on the aircraft across the spectrum of missions which the aircraft has flown since its introduction into the inventory. Therefore, the figures presently being used may or may not be reflective of future usage in light of new low level flying patterns required by the necessity of the aircraft to remain close to the "nap of the earth" in the new conventional role. This requirement is created by the need to avoid radar detection and, therefore, to increase survivability in a future hostile air environment. It is commonly accepted among the AFLC technicians who run the ASIP that low level flying significantly increases the stress on the aircraft structure and, therefore, reduces the overall airframe life more rapidly than flying at higher altitudes. What is not known, since there is little empirical data to support such knowledge, is the long term effects of the significantly increased low level requirements which would be encountered in an <u>all</u> conventional B-52G mission. Although the ASIP provides extremely sophisticated airframe life forecasting techniques, this potential area of vulnerability will require extreme attention in light of the aircraft's age as well as past and future use.

Weapons Availability

The types of non-nuclear weapons which could or should be employed on the B-52G depends on many factors not the least of which are types of targets and the environment in which the aircraft must fly and fight. As mentioned earlier, the early stages of any central European Conflict would most assuredly be marked by an extremely high threat environment. This alone would dictate at least two general classes of weapons to be employed. One, an offensive stand off missile(s) (SOM) which could be employed without subjecting the aircraft to the most threatening of the forward combat areas and two, if the SOM is not successful in keeping the aircraft out of enemy reach, a defensive missile system or an array of systems is required. (4:47) Obviously, a general criteria which both these weapons systems must possesses is a high degree of accuracy. While operating from what in some cases may be quite significant stand off ranges, the SOM must be capable of hitting small, hardened, and sometimes mobile targets all with using a "relatively small" conventional warhead. (4:47) These criteria themselves will, in large part, drive up the cost of the weapon. It has become somewhat of a truism that the more sophisticated and powerful the weapon, the more it will cost, at least in the short run. The cost of a weapon then becomes a procurement criteria all its own. If the procurement costs become too high, trade offs must be evaluated. A weapon system which is too costly could reduce

or eliminate the buy for a separate weapon system to be used against a different type of target or threat. This could also negate the ability to buy sufficient quantities of the same weapon system to carry out the mission for which it was intended. (4:59) These costs must be figured into any overall effort to convert the G model to the conventional role.

Precision Long Range Weapons (stand off missiles) are a relatively new phenomena for bomber aircraft. As a matter of fact, until recently, there were no new conventional weapons specifically built for the bomber since World War II. (4:73) Some of the weapons built since World War II have been adapted to the bomber, but only the JTACMS, presently being developed, was especially designed for the bomber aircraft. (4:73)

Even without having SOMs built specifically for the B-52, it is interesting to note that the G model still has, with only a minor modification, the capability to carry four to six times the number of missiles of a comparably loaded tactical aircraft. With other modifications which are more significant, yet still relatively minor, that advantage can be extended to a factor of 10 to 15 times greater. (26:13)

There are several stand off weapons that are either now available for use on the B-52G or will be entering the inventory in the not-to-distant future. A list of those

weapons which are now available or could be made available quickly are:

Harpoon *
Maverick
GBU-15
Paveway Laser Guided Bombs (LGB)
Have NAP
Harm *
AMRAAM
Penquin
SLAM **

* Range presently being extended
** Being adapted for air launch
(4:71)

Although the individual costs of these weapons are generally known, the information in most cases is classified and, therefore, will not be listed. However, the General Research Corporation does list the estimated overall conventional weapons buy for the B-52G at 12 billion dollars. (4:XIX) The Rand Corporation came up with a figure of 3.6 billion to support only 75 B-52G aircraft. A third study completed in 1976 lists the SOM costs for the B-52 fleet as high as 5 billion dollars in "then year" figures. (26:4) The major differences in these figures can only be assumed to reflect different numbers and types of weapons, or both.

The previous list can be expanded when considering other SOM,s which are in early stages of development and newer gravity systems which were, heretofore, not available for use on the B-52. Table 4 is such an expanded list.

TABLE 4 (4:194)

CANDIDATE WEAPONS SYSTEMS

Nomenclature	SAC Seeking
GBU-15	NO
PAVEWAY LGB	NO
HARPOON	already in inventory
MAVERICK	NO
MRASM	NO
Low Altitude Dispenser	NO
Container Weapon System	NO
Short Range Attack System	NO
Penguin; MK 2,3	NO
Harm	YES
Wide Area Anti-Armor Munition	NO
JTACMS	YES
HAVE NAP	YES
PHOENIX	NO
AMRAAM	YES
Various Sea Mines	Provided by Navy

Although all B-52s have the iron bomb capability listed in Chapter 2 of this report, with and without new weapons the overall conventional utility is severely reduced when maintained in that configuration. This is especially significant when viewed in light of the present, overriding, primary role of the Strategic Integrated Operation Plan (SIOP) under which all B-52s now operate. What this means is that without modifications to carry new SOMs and the release of all or part of the B-52G fleet from the SIOP commitment, the conventional arm of the G model will be particularly hollow.

Supply Support

From the total research done by this author, both classified and non-classified, some sources listed in the Bibliography and others (not used) omitted, nowhere did

anyone discuss the extended supply support for the B-52G model. There are several reasons for this. One, supply support isn't very interesting. Two, the B-52G is not planned to leave the inventory until the 1990s so there remains some time to react. And three, a B-52 is a B-52 and the B-52H model will be around, hopefully, for a long time to come.

There are some obvious pitfalls in the above reasoning. Although supply support is not something the average planner looks forward to each morning as he plans his days activities, it most certainly will be the tail that wags the dog when not given the proper attention while planning the extension of the life of an old weapon system. As has been discovered during other aircraft pre-retirement periods, many manufacturers and supporting agencies start to anticipate the eventual aircraft drawdown months and even years ahead of the actual event. A late decision, especially in cases of long lead time parts and high start-up manufacturing costs, can create many delays, cause many unnecessary frustrations and can cost the Air Force unneeded expense.

As regards the commonality of the parts of the B-52 G and H models, they do, indeed, share many parts. There are also many parts and systems which are as different as one finds on two separate aircraft. This is not an area for generalization.

The answer, however, is not that difficult. The key

is to pay attention to the supply support. It is necessary to make a retention/retirement decision as quickly as possible to give as much leadtime for the Air Force Logistics Command personnel as possible. Lastly, when and if a decision for retention is made, SAC must arrange for a complete audit of the G model supply support with extended life providing a primary focus.

Although the day to day supply support for the retained B-52G was not discussed in any of the applicable references found, considerable discussion was given to the area of War Readiness Spares Kits (WRSK). This is certainly a supply support area requiring considerable attention, especially in light of the overall costs involved with the initial kit procurement. The cost relating to this subject will be discussed in the Cost/Budget section of this report.

At this juncture, suffice to say that the General Research Corporation has reported that the present B-52G WRSK kits available are each fully capable of supporting the number of sorties which could be expected of the B-52 Wing in a conventional wartime environment. This corporation further reported that the four G model WRSK kits in the SAC inventory would handle, at least the initial conversion effort. (4:129 and 201) However, these kits, as they now stand, would require some adjustments to account for the change in equipment resulting from probable aircraft modifications to make them more suitable for the conventional role.

Aircraft Modification Requirements

Aircraft modification requirements are generally created by one or more of the following factors: survivability enhancements, offensive weapon systems upgrades, command and control enhancements, or structural modifications. (4:37) The G model modifications necessary to modernize the fleet have, for the most part, already been planned and in many cases paid for and installed. In actuality these modifications are being performed separately for other reasons, but will provide the G model with advanced avionics systems, enhanced electronic counter measures capabilities, as well as some modifications in the area of weapons system integration and control. (4:191) As was pointed out earlier, outside of some more preventive maintenance structural modifications, no major structural upgrades have been identified nor foreseen for the remainder of the life of the G model in the conventional role.

The study done by the General Research Corporation provided a figure of 3.9 million dollars per aircraft for the modifications mentioned in the preceding paragraph. This totals roughly 600 million dollars for the G model fleet, but as was also pointed out in General Research Corporation report, approximately 55 ships of the G fleet have already been completed with another 14 or so presently funded and awaiting work. (4:191) This certainly does not account for the remainder of the G model fleet nor is there

any reason to believe that there will not be other modifications which will become necessary as the aircraft become more involved in the sophisticated conventional environment. (4:41,45)

Two modifications, not previously mentioned, will almost certainly be required. If the U.S. continues its position of complying with the unratified Strategic Arms Limitation Talks (SALT II) agreement, any B-52G removed from the nuclear fleet inventory, but maintained in an active role, requires some sort of distinguishing structural modification(s). This change is similar in nature to that of the wing root structure modifications on the B-52Gs which made the Air Launched Cruise Missile (ALCM) carriers distinguishable to Soviet spy satellites. Without this modification, the U.S. would surely be accused of violating previous SALT II limits. The other modification which would likely be required is the demodification of the nuclear carriage and employment capabilities.

Personnel/Manpower Requirements

The details of the personnel/manpower requirements supporting a force of conventional bombers is perhaps the most difficult issue of all to discuss because of the various and sundry problems and restrictions. The overall issue, once hardware decisions have been made and courses of action have been plotted, then becomes one with many avenues of resolution. More specifically, problems which must be dealt with are manpower ceilings, training requirements and

technical experience requirements. General Chain has estimated that to move the entire B-52G fleet (approximately 150 aircraft) from a present nuclear role to the conventional role would require about 2,000 additional personnel. The General Research Corporation sets the figure at 3,700. The scope of this paper does not lend itself to validating either figure, but instead to discuss the implications of the overall problem and potential solutions. (4:133/11:7)

One might consider that in light of present and potential arms reduction initiatives such as the Intermediate Range Missile drawdown, that the overall number of Air Force personnel, if properly managed, might not require an increase at all, instead, simply a lateral shift of presently available personnel. This shift, as well as many others, are constantly in motion throughout the Air Force and, as such, could be integrated into any B-52G force conversions.

Although the specifics of how SAC arrived at the 2000 additional personnel are for the most part classified, one must assume that this figure included the surplus of people left from the planned B-52G nuclear force drawdown minus those required to man the new Advanced Technology Bomber. With the on-going manpower shifts resulting from the B-1 build up, one must also assume that these figures were also included in the manpower equation. Notwithstanding the many uncertainties which surround this issue,

some areas are relative straight forward.

In the overall manpower/personnel issue, there are three things which are certain, which in turn make the solutions to the problems inevitably less complicated. One, General Chain already has B-52G flight crews training for the iron bomb mission and crews at Loring and Guam already have experience with offensive missile (harpoon) employment, therefore, aircrew training for the new role would not be considered a bolt from the blue. Second, since the majority of the present SAC force is B-52Gs and Hs, it does not present a insurmountable problem to shift highly skilled crew chiefs and technicians along with the aircraft to their new role. And third, the manpower ceiling which directs Air Force total end strengths is a solid point from which to start force composition juggling. The overall strength of the basic plan, i.e. conversion of the B-52G fleet to a conventional role to increase U.S. conventional capabilities, will be the determining factor in the quest for needed manpower.

Cost Analysis

The dollar costs associated with the conversion of the B-52G fleet from a nuclear carrier to a conventional platform, is by any measure, the most difficult and complex issue of the several logistical problems facing senior decision makers. This is the only logistical issue which could, by itself, result in the rejection of the entire proposal. For this reason, a more in-depth look will be

taken of this critical logistical issue.

In reviewing the costs of maintaining the B-52G, some assumptions and or limitations must be discussed. When analyzing the cost effectiveness of a particular weapon system, one must not only look at the life cycle costs or said differently, the total cost of operating the entire weapon system over its total life, but also the trade-off costs, or what must be given up in lieu of the G model retention. The review of the costs of the B-52G is made more difficult by the yet to be made decision as to whether or not the aircraft will remain in a dual role, i.e. nuclear and conventional, or it will assume an exclusively conventional capability? As is obvious, if the G model is maintained in a dual role, then the cost to maintain the aircraft cannot be totally attributed to its proposed conventional role.

Also a consideration, as mentioned earlier, is the cost to modify the aircraft structurally if it is to be used solely in the conventional role. Again, this modification would enable the Soviets to detect that the carrier is, in fact, only a conventional one. If the U.S. is to continue to abide, to any great extent, with the unratified SALT II agreement and if the B-1 and Advanced Technology Bomber programs continue as planned, then it is logical for the U.S. to demodify the G models to a conventional-only capability. It is for this reason, that this paper must now explore the costs associated with the G model as a

conventional platform only.

In the B-52G cost research done by the General Research Corporation (GRC), the cost of a representative stateside, peacetime operation was drawn from the Loring AFB, Maine fiscal year (FY) 1986 obligations. From the FY 86 figures, the GRC estimated that the annual total costs for a 15 PAA bomber unit and a 29 PAA tanker unit is about $165 million. It must be noted here that these cost figures may not necessarily reflect the cost of a "normal B-52G Wing" with a collocated tanker unit. There are two good reasons for this caveat. Although any future conventional G model Wing could be based in an area with an equally harsh weather environment, the weather at Loring does tend to increase operating costs significantly. Secondly, the number of KC-135s normally required to support a single bomb wing is approximately the same number as the number of B-52s. Therefore, the cost figures given above may or may not be inflated. To lend credibility to these numbers, a second set of cost figures have been included from a similar research project undertaken by RAND. Comments and comparisons will be included.

In any case, the cost figures provided for a single wing need only be multiplied by the eventual number of B-52G conventional wings, and a total force operating cost could be obtained. (4:199) Operating costs are unfortunately, not the only ones to be considered. The following table provides the cost of other areas related to the

modification, retention, and operation of the B-52G fleet.

TABLE 5 (4:XIX)

ESTIMATED RETENTION AND CONFIGURATION COST OF THE B-52G

NONRECURRING COSTS	PER ACFT	69 ACFT (Note 1)	167 ACFT (Note 2)
Basic Modifications (Planned & Programed) (Note 3)	3.9 (Note 4)	269	651
Additional Modifications			
-Weapons System Integration (Note 5)	4.3	297	718
-ASAR & ISAR (Note 6)	3.7-4.0	255-276	618-668
-C3I Upgrades (Note 7)	--	---	---
-WRSK (Note 8)	(4.64)	(320)	750
TOTAL NONRECURRING	11.9-12.2	821-842	2,740-2,787
RECURRING (ANNUAL) COSTS			
Direct O & M Costs (Note 9)	5.8	400	969
Additional Basing and Support (Note 10)	3.8-4.2	260-288	635-701
TOTAL RECURRING	9.6-10.0	660-688	1,604-1,670
ESTIMATED WEAPONS COSTS To support approximately (Note 11)	<----$12 Billion---->		2,300 sorties

From these figures, one can estimate that the operating cost of the entire B-52G model fleet in the conventional role over a 10 year period would total approximately 28 billion dollars. Note that this figure does include tanker support, associated SOM costs, but not the aircraft modification costs which were listed in table 5.

Note 1 This number is a loosely defined figure based on what the General Research Corporation used as an initial drawdown and conversion number. They roughly translated this figure into four 15 PAA

wings for calculation purpose.

Note 2 This number is a more accurate count of the B-52G models remaining in the fleet. It is assumed that General Chains reference to the 150 G models was a rough approximation of this number.

Note 3 These mods include on-going efforts such as avionics updates etc. They do not include mods necessary for potential strand off missile incorporation nor mods to make the conventional G distinguishable from the other nuclear compatible B-52s.

Note 4 This 3.9 figure is a sunk cost on 54 of the G models since these mods have already been completed.

Note 5 The costs for the integration of the SOM into the B-52G fleet is at best a totally estimated figure based on empirical data with a fair amount of "Kentucky Windage" figured in. This technique is made necessary by the weapon systems themselves: many of the more likely ones remain in the developmental stages.

Note 6 These figures presuppose the need for a new radar system called synthetic aperture radar and the improved version, ISAR. This radar will allow for detection and tracking of smaller more mobile targets. This calculation presupposes the need for such a modification and can be factored in or out as the reader wishes.

Note 7 The reader will note that there are no estimates in this category. Again the General Research Corporation presupposes that in a congested, highly dynamic environment such as could be encountered in a tactical war front, that new, improved C3I equipment would be required to enhance the weapon system capability and to improve survivability.

Note 8 The figures for the War Reserve Support Kits take into consideration the four G model kits presently available. Their figures do not include any increases or decreased which might be required as the aircraft is converted from nuclear to an all conventional capability.

Note 9 This figure represents Operations and Maintenance costs (O&M) based on 437 flying hours per aircraft per year. Both cost figures for the B-52 and the flying hours were based on data as provided from Loring AFB, Maine during FY 1986.

Note 10 These costs are similar in nature to those above except that they include the tanker support costs based on a 15/29 bomber to tanker ratio. Again this data was collected from Loring AFB, during FY 86.

Note 11 The calculation and concepts for both the numbers of weapons required and their conventional costs are far too detailed for this paper. The rationale behind the use of the number of combat sorties used for this calculation is that no matter what the wartime scenario nor the number of B-52Gs involved, the number of SOMs envisioned should be enough to see the conflict move into another stage - either nuclear or iron bomb conventional. Also, as pointed out before, the cost of the weapons is based on a best guess as to the types of weapons which will be procured and the eventual cost per unit.

The previously mentioned RAND report on retention of the B-52Gs completed in 1987 uses a more simplistic approach for considering the dollar costs of the G model conversion. Their analysis used a base line figure of $6 million per year to maintain, operate, and support a single B-52G aircraft (this figure was said to have been provided by the USAF). By some extrapolation, this cost for a fleet of 150 B-52s over a 10 year period, should be roughly 9 billion dollars. (13:34)

The RAND report also estimated the fly-away cost of a smart, conventionally armed stand-off missile (one similar to the presently employed Boeing AGM-36B ALCM or the General Dynamics BGM-109 Tomahawk) could cost an estimated $1.2 million per copy. Again extrapolating RAND's figures, an arsenal of 6,000 of these conventionally armed cruise missiles could cost an additional 7.2 billion. This figure is at best an educated guess. (13:34)

A range of weapons would most likely be employed, some already developed, others not, this cost could be higher or lower depending on complexity, payload etc. This author's guess is that the costs will be higher. The overall figure for armaments could also be adjusted by a requirement for more or less of these missiles as well as additional types of weapons such as defensive missile systems like the Harm or AMRAAM not to mention a plethora of new and old gravity weapons. (13:34)

In any event, the extrapolated cost (as identified by the RAND Corporation) for a 150 B-52G fleet may be at least 16 billion dollars over a ten year period. (13:35) As far as could be determined, this figure does not include the support by KC-135 air refueling tankers, nor the cost of any associated aircraft modifications. Depending on the basing and employment concept, the cost for air refueling support could drive the overall figure significantly higher.

The difference in the 10 year costs of the GRC and those of the RAND Cooperation were significant-- 12 billion dollars. This can be explained in several ways. The GRC included the collected KC-135 cost, although possibly inflated, whereas RAND did not include these costs. The SOM costs were totally a shot in the dark and accounted for roughly five billion dollars of the difference. In either case, analyst should not focus too narrowly on one estimate or the other and perhaps, should not even use cost as a determining factor. More important is the overall

economics of what is gained for these relative costs, whether one considers them to be high or low.

Table 5 generated by the GRC listed the cost figures for B-52G War Reserve Spares, a cost not included in the recurring operating and maintenance costs. The cost of a single B-52 WRSK was estimated at $80 million in 1982. This figure requires some adjustment to include inflation and would certainly require adjustment (either up or down) to account for recent modifications and the potential conversion from a nuclear to a conventional carrier. (4:129) The GRC also adds that the four presently available kits would support the number of sorties required (minus a one percent predicted attrition factor) of a four wing conventional bomber effort. What is not included is the costs which would be incurred if more than four wings were retained. A detailed review of all types of spare parts kits available for the G model fleet would be required to provide a figure for the WRSK costs for the total G model fleet. (4:129)

CHAPTER V

CONCLUSION

Throughout the research effort for this paper, the one thread of consistency found in every reference relating to the subject was the unanimous and whole hearted agreement that the retention of all or at least part of the B-52G fleet as a conventional carrier was logical, feasible, and in the best interests of U.S. National Security. The one, overriding concern expressed throughout the research literature is the cost factor. In a period of shrinking U.S. defense dollars, the common concern was how to spend the defense budget wisely while providing the correct balance of conventional versus nuclear forces.

The costs are high indeed, perhaps as high as 28 billion dollars to maintain the entire G model fleet over a ten year period and maybe two or three billion dollars more are needed for aircraft modifications and military construction projects which would surely be generated during the extended life of the weapon system.

Although these figures are gross estimates, in some cases incomplete, and in some instances suspect, it is, however, likely that a modified B-52G, outfitted with the required offensive and defensive weapons and modified to be survivable in a high threat environment would be a great bargain when compared to the costs of an entirely new

airframe with similar capabilities.

As they relate to total weapon systems costs, the other logistical implications present much less of a problem, and require mostly high level attention and action.

Some shifting of manpower positions would likely be possible to cover the shortages envisioned by the Strategic Air Command. It is important to keep in mind that a highly skilled cadre of B-52G trained aircrew and maintenance personnel stand ready in the existing B-52 force. In light of potential nuclear arms reduction and associated savings in terms of overall manpower, Congress could perhaps, be persuaded to be more conciliatory toward an increase in the manpower ceiling to support a stronger conventional air force.

The aircraft modifications and associated weapons systems technology are readily available to support most of the conventional B-52G options discussed. Stand off missiles capable of completing deep penetration missions as currently envisioned are either on the shelf or in development. Gravity weapons such as the ones used in Vietnam are already available. The driving factor in this area is again - the cost.

The Air Force Logistics Command has declared that the B-52G airframe is good until the 2030s and one would expect that the aircraft would, at least, survive even longer than its presently foreseen extended life. However, with the increased low level flight training requirements,

the G model structural integrity program requires continued attention.

The bed down of the conventional B-52G, if pressed to fruition, would depend on many factors, the greatest of which would most likely be politics, both international and domestic. Support costs would obviously run a close second to politics or might be the determining factor. These cost's on one hand, require a careful review in view of the advantages of overseas deployment, and on the other hand, the ability to deploy in any direction while stationed in the Continental U.S. Logistically speaking, there would be few problems in basing the G model oversea. The supply network is well established both east and west and the Strategic Air Command is well experienced in operating in either environment.

The B-52 is a proven performer in the operational arena. It carried much of the bombing load in Vietnam and not only retains that capability, but is active in many areas of the conventional role today. Logistically, in terms of combat support specifics, the conventional role is entirely feasible and would certainly provide the greatest conventional force and deterrent value for the smallest initial investment.

This assumption, however, does not negate the fact that an affirmative decision should be made only after a critical in-depth investigation of the long term logistical impacts of such an effort. The subtleties and pitfalls

inherent in this changeover may be misleading and could lead to long term logistical headaches for all.

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